



PNRR Project – Task 1500-3 | Progetto: EMM – Earth Moon Mars Procedures for data assimilation of future measurements in weather forecasting models

Overview

Establishment of a **High-Performance Computing - HPC** infrastructure for the exploitation of new measurements, primarily satellite observations, within Numerical Weather Prediction (NWP) models, through Data Assimilation (DA) approaches.

HPC Cluster Specifications

Nodes

- CPU cores: **1024**
- Ram Memory: **8TB**
- High performance parallel storage: **500 TB**
- Network: **100Gb/s** super low latency infiniband

AI Node

- CPU cores: **128**
- Ram Memory: **1.5TB**
- GPU: **2 x Nvidia H100nvl 160GB Memory**
- Network: **100Gb/s** super low latency infiniband

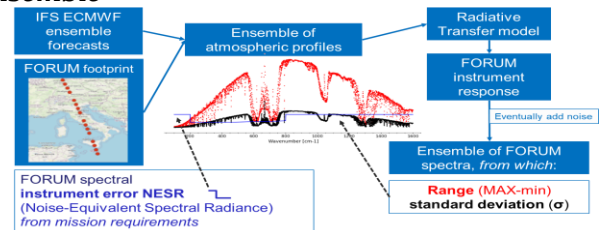
HPC infrastructure



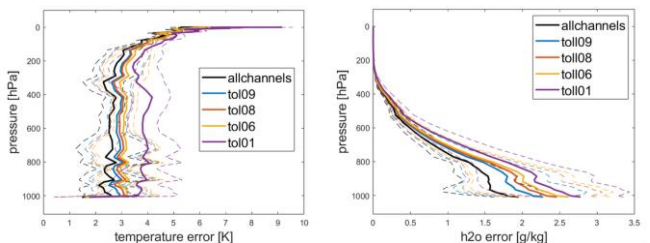
Applications

- DA in NWP models leveraging advanced multiple approaches for future measurements
- Development of machine learning and AI applications related to meteorological and climate modeling.
- Meteorological and climate simulations from sub-seasonal to decadal and multidecadal scales
- Parallel computing for global-scale climate evolution predictions

Ensemble



Channel selection



DA of future mission (e.g., FORUM)

